PATENT
Atty Dkt No.: 134366 (SPLG 1027)

Remarks

Claims 1-24 are now pending in the present application, of which claims 1, 5 and 8 are amended. Claims 1-24 stand rejected. It is respectfully submitted that the pending claims define allowable subject matter.

As an initial matter, Applicants respectfully request acknowledgement of entry of the Preliminary Amendment filed in the present application on November 4, 2003. The Preliminary Amendment was filed to correct minor terminology and item numbers in the specification. No new matter was entered.

Applicants also note that the present Office Action is a first Office Action, and as such cannot be made final. Page 4 of the Office Action states that the action is made final, although the action is indicated as non-final in the Office Action Summary as well as in the PAIR system. Therefore, Applicants respectfully request that the finality of the Office Action be removed.

Claims 1-14, 16-19 and 23 are rejected under 35 USC § 102(e) as being anticipated by Grenon (USP 6,544,178). Claims 15, 20-22 and 24 have been rejected under 35 USC § 103(a) as being unpatentable over Grenon in view of Argiro (USP 5,986,662). Applicants respectfully traverse these rejections for reasons set forth hereafter.

Claim 1 has been amended to recite, in part, "processing said volume data set to form multiple enhanced images" and "presenting said multiple enhanced images simultaneously, said multiple enhanced images being based on said multiple anatomic features within said volume data set". Grenon does not teach or suggest processing a volume data set to form multiple enhanced images and presenting the multiple enhanced images simultaneously wherein the multiple enhanced images are based on multiple anatomic features within the volume data set. Grenon instead scans an object multiple times, such as to track the position of an instrument. In one example, the instrument may be a catheter used during examinations of the heart. (Col. 5, lines 41-43). Grenon states that "an object can be scanned at a first time using the ultrasound scanner to provide a first 3D ultrasound dataset that represents the object and an instrument at a first position (block 500). A volume rendering of at least a portion of the object and a rendering

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of the instrument at a first position can be displayed (block 500)." (Col. 5, lines 24-29). The object is then scanned a second time to provide a second 3D ultrasound dataset of the object and instrument at the second position. (Col. 5, lines 32-35).

Grenon teaches changing a value of a scanning parameter between the acquisition of first and second datasets to change the volume rendering view from one scan to the next. The scanning parameter is disclosed as, for example, a position of the transducer, a scanning gain, and a depth. (Col. 6, lines 12-21). Grenon describes a series of acquisitions:

> [W]here a scanning parameter is set to a first value to provide a first 3D ultrasound dataset that represents the object at the first time (block 600). A volume rendering of at least a portion of the object can be displayed (block 605). The first value can be adjusted based on a view that is generated from the first 3D ultrasound dataset (block 610). The object can be scanned at a second time with the ultrasound scanner where the scanning parameter is set to a second value to provide a second 3D ultrasound dataset that represents the object at the second time (block 615)." (Col. 6, lines 3-11).

Therefore, the value may be changed based on the current view in order to create a different subsequent image, and thus multiple enhanced images are not processed based on the same volume data set. Furthermore, Grenon does not suggest processing the ultrasound data set based on multiple anatomic features within the data set.

With respect to independent claim 9, Grenon does not teach or suggest "processing portions of a dataset with image enhancing techniques" and "presenting multiple images based on said portions, each of said multiple images being processed with a different image enhancing technique". With respect to independent claim 17, Grenon does not teach or suggest a processor "processing said portions [of a volumetric data set] with image enhancing techniques", and "an output for presenting multiple images simultaneously, each of said multiple images being processed with a different image enhancing technique". Therefore, it is submitted that independent claims 9 and 17 are patentable over Grenon for the same reasons described above for claim 1.
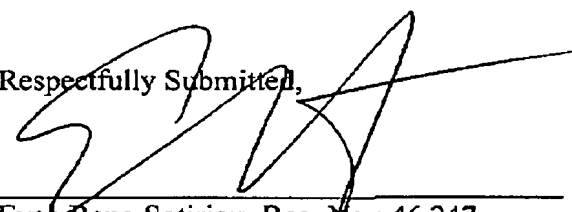
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With respect to the dependent claims, Grenon fails to teach each of the limitations of the dependent claims. Turning specifically to claim 5, Grenon does not describe or suggest processing the volume data set with predefined image enhancing techniques wherein each of the multiple enhanced images are processed with a different image enhancing technique. Grenon is silent to using different image enhancing techniques to process multiple enhanced images that are based on an ultrasonic volume data set. As discussed previously, Grenon suggests changing a value of a scanning parameter between acquisitions of sequential data sets.

Turning to the 103 rejection of claims 15, 20-22 and 24, Applicants respectfully submit that Argiro fails to make up for the deficiencies of Grenon. Accordingly, because claims 9 and 17 are patentable over Grenon in view of Argiro, claims 15, 20-22 and 24 are likewise patentable over Grenon in view of Argiro. Furthermore, turning to dependent claim 22, Argiro is silent to the recitation of the transducer having a transducer type and the processor further identifying a subset of the image enhancing techniques based on the transducer type. Argiro is not concerned with the type of transducer used to acquire the data set. Also, with respect to the dependent claim 24, Argiro is silent to the use of at least one rendering setting control for identifying the image enhancing techniques.

In view of the foregoing amendments and remarks, it is respectfully submitted that the prior art fails to teach or suggest the claimed invention and all of the pending claims in this application are believed to be in condition for allowance. Reconsideration and favorable action is respectfully solicited. Should anything remain in order to place the present application in condition for allowance, the Examiner is kindly invited to contact the undersigned at the telephone number listed below.

Respectfully Submitted,

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